

Online Supplementary Material

Association Between Palliative Care and Healthcare Outcomes Among Adults Dying from Noncancer Illness

A Population-Based Matched Cohort Study

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eText 1 - Description of datasets

All residents of Ontario have universal access to hospital care, physicians' services, and those aged ≥ 65 years of age are provided universal prescription drug insurance coverage without the requirement for co-payment. The administrative datasets used in this study were linked using encoded identifiers at the patient level and analyzed at ICES.

Description of datasets:

Database	Description
Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD)	<p>Contains detailed diagnostic and procedural information for all hospital admissions in Canada.</p> <p>DAD records have been demonstrated to have excellent agreement (over 99%) for demographic and administrative data. Regarding diagnoses, median agreement between original DAD records and re-abstracted records for the 50 most common most responsible diagnoses was noted to be 81% (Sensitivity 82%; Specificity 82%). The corresponding median agreement for the 50 most frequently performed surgical procedures was 92% (sensitivity 95%, positive predictive value 91%).¹</p>
Continuing Care Reporting System Long-Term Care (CCRS-LTC)	<p>Contains demographic, administrative, clinical and resource utilization information on patients who receive continuing care services in hospitals or long-term care (LTC) homes in Canada. The long-term care dataset is generated from the Individual Assessment Instrument Minimum Data Set 2.0, a mandatory comprehensive, standardized and validated instrument for evaluating the needs, strengths, and preferences of elderly adults residing in nursing homes and receiving home care, contains detailed information on the functional status of these people.² Full assessments are completed on admission or referral, at quarterly intervals and following any significant health status change.</p>
Home Care Database (HCD)	<p>Contains patient-level data on government-funded home and community services.</p>
National Ambulatory Care Reporting System (NACRS)	<p>Reports demographic, administrative, clinical and service-specific data for Emergency Department visits.</p>
National Rehabilitation Reporting System (NRS)	<p>Contains patient data collected from participating adult inpatient rehabilitation facilities and programs across Canada</p>
Ontario Congestive Heart Failure (CHF)	<p>Contains all Ontario individuals with CHF identified since 1991.</p> <p>A diagnosis of HF was identified by the presence of one hospital record or physician claim, followed by a</p>

	second record from either source within 1 year. This method has been previously validated with a sensitivity of 84.8% and a specificity of 97.0%. ³
Ontario Drug Benefit (ODB)	Provides individual prescription records including all prescriptions dispensed to Ontario residents aged 65 years and older. Each medication claim has an associated prescriber identifier which indicates the health practitioner who wrote the prescription. An audit of 5,155 randomly selected prescriptions dispensed from 50 Ontario pharmacies determined that the ODB had an error rate of 0.7% and none of the pharmacy characteristics examined (locations, owner affiliation, productivity) were associated with coding errors. ⁴
Ontario Health Insurance Plan (OHIP)	Identifies physician billing claims and specialty on all services provided by fee-for-service physicians in Ontario.
Ontario Mental Health Reporting System (OMHRS)	Documents data on patients in adult designated inpatient mental health beds. This includes beds in General, Provincial Psychiatric, and Specialty Psychiatric facilities.
Office of the Registrar General – Deaths (ORGD)	An annual dataset containing information on all deaths registered in Ontario starting on January 1 1990 that includes the cause of death as indicated on their death certificate.
Registered Persons Database (RPDB)	Registry of all Ontarians eligible to receive insured health services in the province and contains detailed demographic information as well as the Local Health Integration Networks (LHIN), which defines Ontario 14 regional areas within which people received most of their hospital care from local hospitals. The RPDB also provides information on the date and location of death for all individuals in Ontario.
Same Day Surgery (SDS)	Contains patient-level data for day surgery institutions in Ontario. Every record corresponds to one same-day surgery or procedure stay

eText 2 – The hospital risk score and determining functional decline in people who have received a home care assessment

The hospital frailty risk score (range 0-50) is a comprehensive and validated measure of a person's function and comorbidity that reflects global illness severity and identifies a group of patients who are at greater risk of adverse outcomes including hospitalization and 30-day mortality.⁵ We categorized hospital frailty measures into 4 groups based on the distribution of scores within our cohort: 0, 0.1-8.9, ≥ 9 and not hospitalized.

Functional decline:

‘Yes’ for any of the following conditions:

Use a 2-year lookback from index date to determine if an person has had a prior RAI completed

- a. New RAIHC assessment in the 1 year prior to *index date*
- b. Increase in 1 point on activities of daily living scale (long form) from last assessment
 - i. *Must fall in the 1 year prior to index date*
- c. Increase in 1 point on activities of daily living scale (self-form) from last assessment
 - i. *Must fall in the 1 year prior to index date*
- d. Variable “ADL Decline” = “Yes” from last assessment
 - i. *Must fall in the 1 year prior to index date*

If any of ‘c’-‘e’ do not fall in the 1 year prior to index date, code this as “No” (i.e. this does not count as the presence of functional decline)

eText 3 - Physician claims fee codes used to identify delivery of palliative care including location

Outpatient

- A945 (without and with B codes): Special palliative care consultation in clinic, office, home; minimum 50 min
- K015 (if no other feecode combination below was met): Counselling of relatives on behalf of catastrophically or terminally ill patient
- K023 (if no other feecode combination below was met): Palliative care support in half hour increments; may be used to add time for longer consultations following a code for A945, or for any PC support visit. Exclude if patient is in hospital, long-term care (LTC), complex continuing care (CCC), or rehabilitation

Home-based

- A900 with (B966, B998, B997): Complex house call assessment
- A901 with (B966, B998, B997): House call assessment
- A945 with any B code: Special palliative care consultation
- K023 with A900 A901 or any B code: Palliative care support
- K015 with A900 A901 or any B code: Counselling of relatives on behalf of catastrophically or terminally ill patient
- B966: Palliative care home visit; travel premium – weekdays daytime
- B998 : Palliative care home visit; special visit premium – weekdays daytime, first person seen
- B997: Palliative care home visit; special visit premium – nights, first person seen
- A900 A901 B960 B961 B962 B963 B964 B986 B987 B988 B990 B992 B993 B994 B996 within the last 3 months prior to death

Hospital inpatient

- C945: Special palliative care consultation
- C882: Palliative care; Non-emergency subsequent visits by the MRP following transfer from an Intensive Care Area
- C982: Palliative care; Emergency subsequent visits by the MRP following transfer from an Intensive Care Area
- K015 with (C945 C882 C982): Counselling of relatives on behalf of catastrophically or terminally ill patient
- K023 with (C945 C882 C982): Palliative care support in half hour increments; may be used to add time for longer consultations following a code for A945, or for any PC support visit.

Subacute care

- W882: Palliative care; Long-term care subsequent visit
- W982: Palliative care; Long-term care subsequent visit (for community medicine practitioners)
- K015 with (W882 W982): Counselling of relatives on behalf of catastrophically or terminally ill patient
- K023 with (W882 W982): Palliative care support in half hour increments; may be used to add time for longer consultations following a code for A945, or for any PC support visit.

Third-party encounters

- G511: Telephone services to patient receiving PC at home (max. 2/week)

- G512: Weekly care case management from palliative primary care management (Monday–Sunday)
- K700: Palliative care outpatient case conference

eText 4 - Determining location of death using RPDB

Hospital

- Hospital
- ICU

Home

- Community
- LTC

Other

- Unknown

eText 5 - Capturing delivery of potentially burdensome interventions

The following Canadian Classification of Health Interventions (CCI) or OHIP service codes were used to capture the delivery of potentially burdensome interventions:

Positive pressure ventilation

- PPV 1.GZ.31

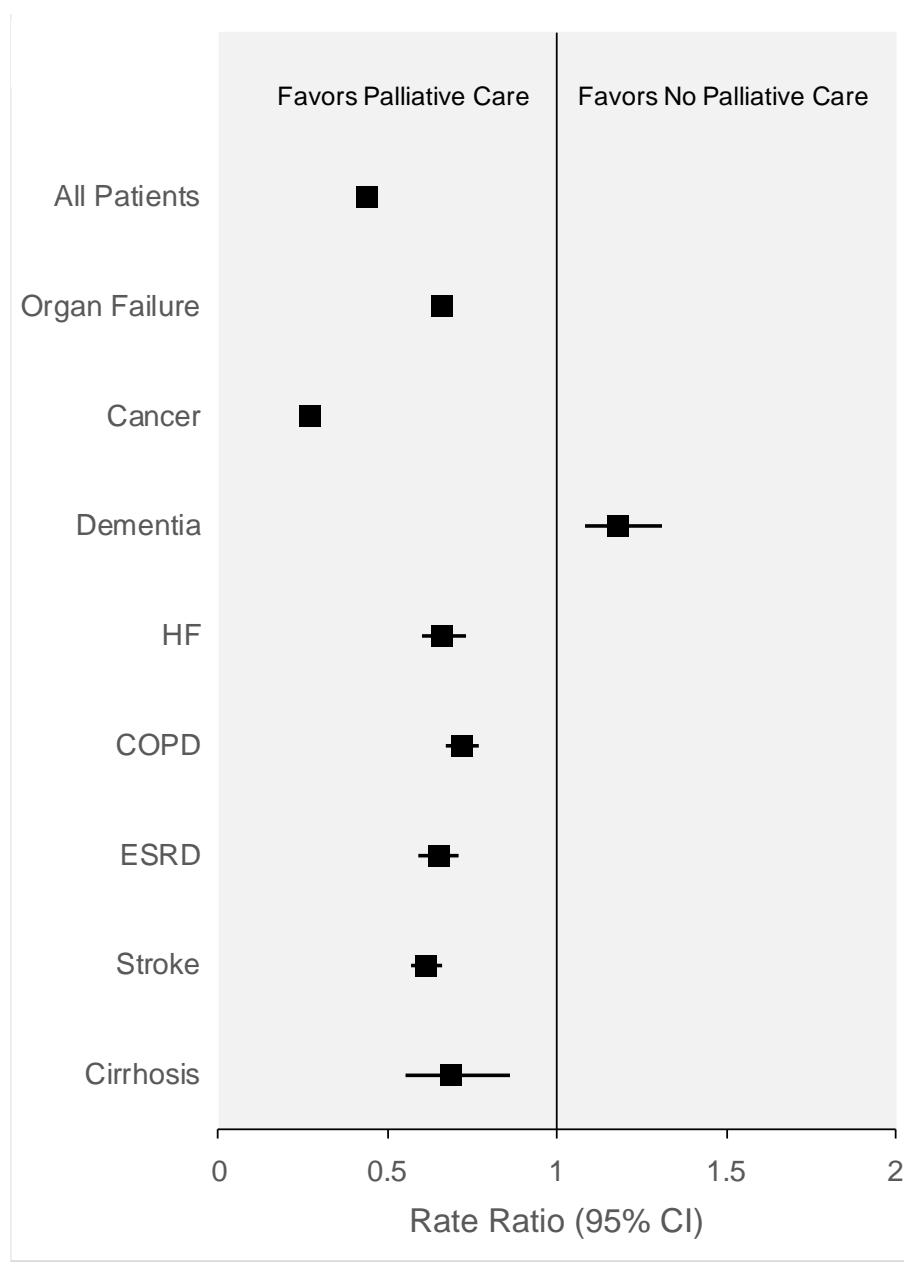
Resuscitation

- Resuscitation 1.HZ.30
- Defibrillation 1.HZ.09
- General Resuscitation G521, G522, G523

Dialysis

- 1.PZ.21

eFigure 1 - The association between palliative care and potentially burdensome interventions. Association between newly initiated palliative care and rates of potentially burdensome interventions (positive pressure ventilation, resuscitation, initiation of dialysis) among adults in the last 6 months of life dying from cancer and noncancer illness in Ontario between 2010 and 2015. Models were adjusted for age, sex, comorbidities, rurality, neighborhood income, frailty and hospitalizations in the year prior to index date.



eTable 1 – Baseline characteristics *at 6 months prior to death* of matched patients in the last 6 months of life who died of cancer in Ontario between 2010 and 2015 by receipt of palliative care.

	Received Palliative Care		
	Yes (n = 24,994)	No (n = 25,226)	Weighted Standardized Difference
Age in years, mean (SD)	74.5 (13.3)	75.0 (12.5)	0.03
Female sex, n (%)	12,244 (49.0)	11,267 (44.7)	0.09
Cause of death, n (%)			
Cancer	24,994 (100.0)	25,226 (100.0)	0.00
Year of death, n (%)			
2010	4,006 (16.0)	5,550 (22.0)	0.15
2011	4,162 (16.7)	5,184 (20.6)	0.10
2012	4,083 (16.3)	4,910 (19.5)	0.08
2013	4,136 (16.5)	3,414 (13.5)	0.08
2014	4,314 (17.3)	3,133 (12.4)	0.14
2015	4,293 (17.2)	3,035 (12.0)	0.15
Rural, n (%)	3,998 (16.0)	5,048 (20.0)	0.10
Hospital Frailty Score, n (%)			
Mean (SD)	4.3 (5.8)	4.6 (6.2)	0.04
Median (IQR)	2 (0-6)	2 (0-7)	0.04
0	6,308 (25.2)	6,323 (25.1)	0.00
0.1-8.9	9,522 (38.1)	9,594 (38.0)	0.00
9+	3,515 (14.1)	3,631 (14.4)	0.00
Not hospitalized	5,649 (22.6)	5,678 (22.5)	0.00
Chronic Conditions			
Arrhythmia	2,707 (10.8)	2,926 (11.6)	0.02
Cancer			
Primary	6,991 (28.0)	5,929 (23.5)	0.10
Metastatic	2,362 (9.5)	2,377 (9.4)	0.00
COPD	2,329 (9.3)	2,808 (11.1)	0.06
Congestive heart failure	1,745 (7.0)	2,031 (8.1)	0.04
Coronary artery disease	2,803 (11.2)	2,864 (11.4)	0.00
Dementia	820 (3.3)	1,444 (5.7)	0.11
Diabetes	4,203 (16.8)	4,537 (18.0)	0.03
Hypertension	17,289 (69.2)	17,635 (69.9)	0.01
Renal disease	1,089 (4.4)	1,242 (4.9)	0.02
Rheumatoid arthritis	620 (2.5)	673 (2.7)	0.01
Stroke	1,128 (4.5)	1,293 (5.1)	0.03
Prior healthcare use^a, median (IQR)			
No. unique prescription medications	9 (0-16)	9 (1-16)	0.06

Emergency department visits	1 (0-2)	0 (0-2)	0.04
Hospitalizations	0 (0-1)	0 (0-1)	0.06

COPD – Chronic obstructive pulmonary disease; ESRD – End-stage renal disease; IQR – Interquartile range

eTable 2 - Baseline characteristics at date of first palliative care visit (index date) of matched patients in the last 6 months of life who died of cancer in Ontario between 2010 and 2015 by receipt of palliative care.

	Received Palliative Care		Weighted Standardized Difference
	Yes (n = 24,994)	No (n = 25,226)	
Age in years, mean (SD)	74.8 (13.3)	75.3 (12.5)	0.03
Female sex, n (%)	12,244 (49.0)	11,267 (44.7)	0.09
Cause of death, n (%)			
Cancer	24,994 (100.0)	25,226 (100.0)	0.00
Year of death, n (%)			
2010	4,006 (16.0)	5,550 (22.0)	0.15
2011	4,162 (16.7)	5,184 (20.6)	0.10
2012	4,083 (16.3)	4,910 (19.5)	0.08
2013	4,136 (16.5)	3,414 (13.5)	0.08
2014	4,314 (17.3)	3,133 (12.4)	0.14
2015	4,293 (17.2)	3,035 (12.0)	0.15
Rural, n (%)	4,003 (16.0)	5,025 (19.9)	0.10
Hospital Frailty Score, n (%)			
Mean (SD)	5.7 (6.5)	5.5 (6.7)	0.12
Median (IQR)	3 (0-9)	3 (0-8)	0.12
0	5,283 (21.1)	5,559 (22.0)	0.03
0.1-8.9	12,470 (49.9)	10,780 (42.7)	0.14
9+	5,678 (22.7)	4,887 (19.4)	0.09
Not hospitalized	1,563 (6.3)	4,000 (15.9)	0.31
5.7 (6.5)		5.5 (6.7)	0.12
Chronic Conditions			
Arrhythmia	3,707 (14.8)	3,609 (14.3)	0.02
Cancer			
Primary	9,010 (36.0)	7,649 (30.3)	0.12
Metastatic	9,954 (39.8)	4,437 (17.6)	0.51
COPD	3,411 (13.6)	3,385 (13.4)	0.01
Congestive heart failure	2,387 (9.6)	2,535 (10.0)	0.01
Coronary artery disease	3,254 (13.0)	3,168 (12.6)	0.01
Dementia	1,397 (5.6)	1,815 (7.2)	0.06
Diabetes	5,526 (22.1)	5,187 (20.6)	0.05
Hypertension	17,696 (70.8)	17,870 (70.8)	0.00
Renal disease	1,576 (6.3)	1,556 (6.2)	0.01
Rheumatoid arthritis	632 (2.5)	682 (2.7)	0.01
Stroke	1,567 (6.3)	1,502 (6.0)	0.01

Prior healthcare use^a, median (IQR)			
No. unique prescription medications	12 (2-19)	11 (2-19)	0.04
Emergency department visits	2 (1-3)	1 (0-2)	0.28
Hospitalizations	1 (0-2)	0 (0-1)	0.39
Functional Decline^b	5,397 (21.6)	4,411 (17.5)	0.11
Physician Type n,(%)			
General Practitioner	18,330 (73.3)	--	--
Specialist	6,664 (26.7)	--	--
Palliative Care Specialist	10,330 (41.3)	--	--

^aPrior healthcare use in the 12 months prior to the last 6 months of life

^bFor people with a completed home care assessment within the last 2 years of life

COPD – Chronic obstructive pulmonary disease; ESRD – End-stage renal disease; IQR – Interquartile range

eTable 3 – Baseline characteristics of unmatched patients in the last 6 months of life who died of noncancer illness in Ontario between 2010 and 2015 by receipt of palliative care.

	Received Palliative Care		
	Yes (n = 23,265)	No (n = 40,055)	Standardized Difference
Age in years, mean (SD)	84.1 (9.3)	82.7 (11.0)	0.14
Female sex, n (%)	14,153 (58.8)	33,607 (58.5)	0.01
Cause of death, n (%)			
COPD	4,155 (17.3)	11,429 (19.9)	0.07
Dementia	9,447 (39.3)	23,371 (40.7)	0.03
Cirrhosis	425 (1.8)	1,277 (2.2)	0.03
ESRD	2,492 (10.4)	4,462 (7.8)	0.09
Congestive heart failure	2,974 (12.4)	5,204 (9.1)	0.11
Stroke	4,575 (19.0)	11,735 (20.4)	0.04
Rural, n (%)	2,477 (10.3)	9,427 (16.4)	0.18
Hospital Frailty Score, n (%)			
Mean (SD)	8.8 (8.5)	8.5 (8.2)	0.03

Median (IQR)	7 (2-13)	6 (2-13)	0.03
0	2,932 (12.2)	7,100 (12.4)	0.01
0.1-8.9	8,697 (36.1)	19,625 (34.1)	0.04
9+	7,694 (32.0)	17,049 (29.7)	0.05
Not hospitalized	4,745 (19.7)	13,704 (23.8)	0.1
Chronic Conditions			
Arrhythmia	5,410 (22.5)	10,402 (18.1)	0.11
Cancer			
Primary	1,529 (6.4)	2,906 (5.1)	0.06
Metastatic	266 (1.1)	367 (0.6)	0.05
COPD	4,754 (19.8)	10,531 (18.3)	0.04
Congestive heart failure	4,871 (20.2)	9,363 (16.3)	0.1
Coronary artery disease	4,086 (17.0)	8,165 (14.2)	0.08
Dementia	4,960 (20.6)	12,905 (22.5)	0.04
Diabetes	5,113 (21.2)	11,308 (19.7)	0.04
Hypertension	20,075 (83.4)	45,454 (79.1)	0.11
Renal disease	2,747 (11.4)	4,937 (8.6)	0.09
Rheumatoid arthritis	823 (3.4)	1,659 (2.9)	0.03
Stroke	2,649 (11.0)	5,494 (9.6)	0.05
Prior healthcare use^a, median (IQR)			
No. unique prescription medications	15 (9-21)	14 (8-21)	0.07
Emergency department visits	1 (0-2)	0 (0-2)	0.19
Hospitalizations	0 (0-1)	0 (0-1)	0.17

COPD – Chronic obstructive pulmonary disease; ESRD – End-stage renal disease; IQR – Interquartile range

^aPrior healthcare use in the 12 months prior to the last 6 months of life

eTable 4 – Baseline characteristics of unmatched patients in the last 6 months of life who died of cancer in Ontario between 2010 and 2015 by receipt of palliative care.

	Received Palliative Care		
	Yes (n = 23,265)	No (n = 40,055)	Standardized Difference
Age in years, mean (SD)	72.4 (12.8)	75.0 (12.6)	0.21
Female sex, n (%)	39,551 (48.2)	11,304 (44.7)	0.07
Cause of death, n (%)			
Cancer	82,120 (100.0)	25,281 (100.0)	0.00
Rural, n (%)	11,583 (14.1)	5,056 (20.0)	0.16
Hospital Frailty Score, n (%)			
Mean (SD)	3.3 (5.0)	4.6 (6.2)	0.23
Median (IQR)	1 (0-5)	2 (0-7)	0.20
0	25,458 (31.0)	6,329 (25.0)	0.13
0.1-8.9	32,893 (40.1)	9,608 (38.0)	0.04
9+	7,617 (9.3)	3,647 (14.4)	0.16
Not hospitalized	16,152 (19.7)	5,697 (22.5)	0.07
Chronic Conditions			
Arrhythmia	7,743 (9.4)	2,932 (11.6)	0.07
Cancer			
Primary	21,150 (25.8)	5,937 (23.5)	0.05
Metastatic	15,016 (18.3)	2,391 (9.5)	0.26
COPD	6,971 (8.5)	2,810 (11.1)	0.09
Congestive heart failure	4,552 (5.5)	2,034 (8.0)	0.10
Coronary artery disease	8,340 (10.2)	2,867 (11.3)	0.04
Dementia	1,829 (2.2)	1,448 (5.7)	0.18
Diabetes	14,257 (16.8)	4,539 (17.9)	0.06

Hypertension	54,605 (66.5)	17,667 (69.9)	0.07
Renal disease	2,924 (3.6)	1,244 (4.9)	0.07
Rheumatoid arthritis	1,984 (2.4)	674 (2.7)	0.02
Stroke	3,211 (3.9)	1,296 (5.1)	0.06
Prior healthcare use^a, median (IQR)			
No. unique prescription medications	8 (0-15)	9 (1-16)	0.12
Emergency department visits	1 (0-2)	0 (0-2)	0.08
Hospitalizations	0 (0-1)	0 (0-1)	0.09

COPD – Chronic obstructive pulmonary disease; ESRD – End-stage renal disease; IQR – Interquartile range

^aPrior healthcare use in the 12 months prior to the last 6 months of life

eTable 5 – Healthcare use and location of death in matched patients in the last 6 months of life who died of noncancer illness in Ontario between 2010 and 2015 following initiation of palliative care or matching index date.

	Received Palliative Care	
	Yes (n = 23,265)	No (n = 40,055)
Emergency department visits^a		
Cumulative number per person, mean (SD)	0.2 (0.6)	0.2 (0.6)
Cumulative number per person, median (IQR)	0 (0-0)	0 (0-0)
Rate (per person-year), median, (IQR)	0 (0-0)	0 (0-0)
Hospitalization		
Cumulative number per person, mean (SD)	0.5 (0.8)	0.5 (0.7)
Cumulative number per person, median (IQR)	0 (0-1)	0 (0-1)
Rate (per person-year), median (IQR)	0 (0-7)	0 (0-8)
ICU admissions		
Cumulative number per person, mean (SD)	0.1 (0.4)	0.1 (0.4)
Cumulative number per person, median (IQR)	0 (0-0)	0 (0-0)
Rate (per person-year), median (IQR)	0 (0-0)	0 (0-0)
Location of death, n (%)		
Hospital	5,460 (23.5)	10,632 (26.5)
ICU	684 (2.9)	3,223 (8.0)
Home	10,688 (45.9)	21,344 (53.3)

Nursing Home	2,925 (12.6)	1,566 (3.9)
Other	3,508 (15.1)	3,290 (8.2)
Active interventions^b, mean rate (SD) (person-year)	2.4 (9.7)	4.0 (12.9)

^aEmergency department visits not resulting in hospital admission

^bActive interventions include a composite of positive pressure ventilation, resuscitation and newly initiated dialysis

IQR – Interquartile range, SD – Standard deviation

eTable 6 – Healthcare use and location of death in matched patients in the last 6 months of life who died of cancer in Ontario between 2010 and 2015 following initiation of palliative care or matching index date.

	Received Palliative Care	
	Yes (n = 24,994)	No (n = 25,226)
Emergency department visits^a		
Cumulative number, mean (SD)	0.4 (1.0)	0.5 (1.1)
Cumulative number, median (IQR)	0 (0-1)	0 (0-1)
Rate (per person-year), median, (IQR)	0 (0-2)	0 (0-3)
Hospitalization		
Cumulative number, mean (SD)	0.7 (0.9)	0.8 (0.8)
Cumulative number, median (IQR)	1 (0-1)	1 (0-1)
Rate (per person-year), median (IQR)	2 (0-8)	4 (0-10)
ICU admissions		
Cumulative number, mean (SD)	0.1 (0.3)	0.2 (0.5)
Cumulative number, median (IQR)	0 (0-0)	0 (0-0)
Rate (per person-year), median (IQR)	0 (0-0)	0 (0-0)
Location of death, n (%)		
Hospital	6,676 (26.7)	10,155 (40.3)
ICU	418 (1.7)	3,378 (13.4)
Home	10,184 (40.7)	7,960 (31.6)
Nursing Home	4,876 (19.5)	1,356 (5.4)
Other	2,840 (11.3)	2,377 (9.4)
Active interventions^b, mean rate (SD) (person-year)	1.0 (5.4)	3.9 (11.6)

^aEmergency department visits not resulting in hospital admission

^bActive interventions include a composite of positive pressure ventilation, resuscitation and newly initiated dialysis

IQR – Interquartile range, SD – Standard deviation

eTable 7 – Healthcare use and location of death in matched patients in the last 6 months of life who died from dementia and reside in a nursing home in Ontario between 2010 and 2015 following initiation of palliative care or matching index date.

	Unadjusted Odds Ratio (95% confidence interval)	Adjusted ^a Odds Ratio (95% confidence interval)
Emergency department visit ^b	0.93 (0.84-1.03)	0.843 (0.7778-0.9091)
Hospitalization	1.37 (1.27-1.47)	1.09-10 (1.024-1.0818)
Death at home (versus hospital) ^c	0.66 (0.60-0.73)	0.90 (0.81-0.99)

^aModels were adjusted for age, sex, comorbidities, rurality, neighborhood income, frailty and hospitalizations in prior year

^bEmergency department visits not resulting in hospital admission

^cLocations of death include home (including nursing home deaths), acute care (including hospital and ICU deaths), subacute care (including rehabilitation hospitals) and unknown.

eTable 8 – Healthcare use and location of death in matched patients in the last 6 months of life who died from dementia and did not reside in a nursing home in Ontario between 2010 and 2015 following initiation of palliative care or matching index date.

	Unadjusted Odds Ratio (95% confidence interval)	Adjusted ^a Odds Ratio (95% confidence interval)
Emergency department visit ^b	4.130.91 (4.060.82-4.241.00)	4.060.96 (4.040.88-4.12.05)
Hospitalization	4.530.97 (4.460.90-4.60.03)	4.330.99 (4.270.93-4.391.06)
Death at home (versus hospital) ^c	0.661.37 (0.601.25-10.73.51)	0.941.35 (0.81.323-4.001.49)

^aModels were adjusted for age, sex, comorbidities, rurality, neighborhood income, frailty and hospitalizations in prior year

^bEmergency department visits not resulting in hospital admission

^cLocations of death include home (including nursing home deaths), acute care (including hospital and ICU deaths), subacute care (including rehabilitation hospitals) and unknown.

eTable 9 – Evaluation of effect modification by cause of death on associated healthcare use and location of death in matched patients in the last 6 months of life who died in Ontario between 2010 and 2015 following initiation of palliative care or matching index date.

	Adjusted ^a Rate or Odds Ratio (95% CI)
Emergency department visit ^b Reference: Organ Failure Reference: Dementia Reference: Cancer	0.88 (0.85-0.92) 0.70 (0.67-0.74) 0.98 (0.95-1.00)
Hospitalization Reference: Organ Failure Reference: Dementia Reference: Cancer	1.01 (0.99-1.04) 0.81 (0.79-0.85) 0.84 (0.82-0.85)
ICU Admission Reference: Organ Failure Reference: Dementia Reference: Cancer	0.78 (0.74-0.82) 0.25 (0.22-0.29) 0.20 (0.19-0.21)
Death at home (versus hospital) ^c Reference: Organ Failure Reference: Dementia Reference: Cancer	1.32 (1.27-1.37) 1.58 (1.51-1.66) 2.47 (3.39-2.55)

^aModels were adjusted for age, sex, comorbidities, rurality, neighborhood income, frailty and hospitalizations in prior year

^bEmergency department visits not resulting in hospital admission

^cLocations of death include home (including nursing home deaths), acute care (including hospital and ICU deaths), subacute care (including rehabilitation hospitals) and unknown.

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